ENVS2266

Earth Surface Processes

Session 1, In person-scheduled-weekday, North Ryde 2023

School of Natural Sciences

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
ENVE117 or ENVS117 or ENVS1017 or GEOS117 or GEOS112 or GEOS1110 or EESC1150

Corequisites

Co-badged status

Unit description
Understanding how and why the Earth's surface looks and changes in the way it does is fundamental to effective environmental management. This unit examines earth surface processes from a catchment perspective: hill slopes and soils; rivers and floodplains; and the materials, including contaminants, that comprise them. We draw on Australian and overseas examples from diverse environments to demonstrate how biophysical processes shape our landscape. Students gain practical, laboratory and field-based skills that help them interpret the landscape. These are taught in both on-campus sessions and weekend field trips. This unit builds on themes introduced in ENVS1017 and GEOS1110, and provides a sound conceptual background for students continuing in environmental sciences, environmental management and courses in ecology, biology, geology and archaeology.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Apply knowledge and understanding of important concepts in geomorphology

ULO2: Interpret geomorphic processes from landforms and materials in a wide range of environments

ULO4: Critically evaluate and analyse scientific literature, including the interpretation of data.

ULO3: Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings

ULO5: Complete a field research project including data gathering and interpretation

ULO6: Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

General Assessment Information

Requirements to Pass this Unit

To pass this unit you must:

- Attempt all assessments, and
- Achieve a total mark equal to or greater than 50%

All written (uploaded) assessments must be submitted by 11.55 pm on their due date. Should these assessments be missed due to illness or misadventure, students should apply for Special Consideration. If you anticipate not being able to meet the deadline ahead of time then also apply for Special Consideration and/or a deadline extension.

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

Late submissions will be accepted (with penalty) for the practicals and field reports. Late submissions are not possible for the weekly quizzes.

Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

PRACTICALS (10%, four practicals must be submitted from which two will be chosen randomly to mark)

These should be clearly presented (as opposed to beautiful) but short and not over-produced. The main objective is to see that you have understood the content of each practical and are competent in the required skills so that we can monitor your progress. The remaining pre and post fieldwork practicals will be used for preparation of maps or data analysis which will be used in the fieldwork reports.

Developing	*Functional*	*Proficient*	*Advanced*
an incomplete or unreadable record of observations; many inaccuracies, gaps, few or inaccurate interpretations	record accurately and clearly details of location, observations, data, interpretations using diagrams, tables, maps, graphs and text. Give clear, complete answers to questions	complete, accurate and clear record (as for Functional) with clear interpretations, considered answers, additional schematic diagrams	as for proficient but with original attempts at synthesis and exploration of hypotheses.

WEEKLY CONTENT QUIZZES (5%)

Each week a short quiz (iLearn) will test your knowledge and understanding of each week's lecture content.

Developing	*Functional*	*Proficient*	*Advanced*
Unable to define or apply many terms or concepts taught in lectures.	Able to define terms introduced in lectures and apply concepts to examples.	Able to define terms consistently and apply concepts to examples with confidence and accuracy.	As for proficient, with ability to extrapolate to new examples and situation.

FIELD REPORT 1 (20%)

This report is based on the first fieldtrip, the preparatory practical sessions, post-fieldwork data analysis and your own reading and research on the topic. You will be given a question which you must address in your report. The research and thought which go into each report are an important part of your learning in this unit. We expect that you will deepen your understanding of the topic and your field experience by discovering the links between your observations and previous published research in the scientific literature. The report should be presented with a high standard of presentation (clarity and accuracy, not necessarily 'pretty'), with diagrams, maps, graphs and tables (as appropriate) and standard scientific citation and referencing. You will be provided with some essential and useful readings for these reports but you should also undertake your own research of the primary scientific literature.

Developing	*Functional*	*Proficient*	*Advanced*

Lacks a clear explanation of research question, hypothesis or research strategy. Results may not be presented completely or accurately and may not support interpretations. May lack support from suitable literature.	able to explain the research question clearly; explain the hypothesis and show a clear and suitable research strategy; show appropriate results clearly and with accuracy; draw main conclusions from data and outstanding limitations. Supported by reference to appropriate literature.	as for functional level but with greater insight into question, results and interpretations. Includes acknowledgement and/or discussion of limitations of data/interpretations.	as for proficient but with originality in approach and/or interpretation of results.

FIELD REPORT 2 (30%)

This report is based on the second fieldtrip, the preparatory practical sessions, post-fieldwork data analysis and your own reading and research on the topic. You will develop your own question which you must address in your report, tailoring the presentation and discussion of your results to answer the question and placing them within a context revealed by your readings. The report should be presented in the format of scientific report, with a high standard of presentation (clarity and accuracy, not necessarily 'pretty'), with diagrams, maps, graphs and tables (as appropriate) and standard scientific citation and referencing. You will be provided with some essential and useful readings for these reports but you should also undertake your own research of the primary scientific literature. See guidelines (below) for report writing style.

Developing	***Functional***	***Proficient***	***Advanced***
Lacks a clear explanation of research question, hypothesis or research strategy. Results may not be presented completely or accurately and may not support interpretations. May lack support from suitable literature.	able to explain the research question clearly; explain the hypothesis and show a clear and suitable research strategy; show appropriate results clearly and with accuracy; draw main conclusions from data and outstanding limitations. Supported by reference to appropriate literature.	as for Functional level but with greater insight into question, results and interpretations. Includes acknowledgement and/or discussion of limitations of data/interpretations.	as for Proficient but with originality in approach and/or interpretation of results.

EXAMINATION (35%)

The exam will be scheduled in the regular University examination period. The exam is 2 hours in length and will cover all subjects covered in the lectures, practicals and fieldtrips. There is a combination of short answer and longer (short essay) style questions. Past exam papers can be found on the library web site.

Developing	***Functional***	***Proficient***	***Advanced***
Unable to explain basic terms and concepts clearly or accurately. Unable to illustrate terms and concepts with specific examples or conceptual diagrams. Unable to extrapolate concepts to new situations.	able to explain terms and concepts clearly and accurately; can illustrate terms and concepts with specific examples and conceptual diagrams. Can apply knowledge to new situations with some competence.	as for Functional level but with greater critical insight. Includes acknowledgement and/or discussion of limitations or drawbacks of own knowledge.	as for Proficient but with originality in approach and/or interpretation.

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly content quizes	5%	Yes	each Friday by 11.55 pm
Practical classes	10%	No	by 11.55 pm, Monday following pracs class
Field Report 1	20%	No	24 April, by 11.55 pm
Field Report 2	30%	No	29 May, by 11.55 pm
Final Exam	35%	No	Mid-year exam period (TBA)

Weekly content quizes

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 2 hours
Due: **each Friday by 11.55 pm**
Weighting: **5%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

A short quiz testing knowledge and understanding of each week's workshop content

On successful completion you will be able to:

- Apply knowledge and understanding of important concepts in geomorphology

Practical classes

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 10 hours
Due: **by 11.55 pm, Monday following pracs class**
Weighting: **10%**

Completed practicals to be submitted, including presentation of data, diagrams, graphs or short answers relating to the practical classes

On successful completion you will be able to:

- Interpret geomorphic processes from landforms and materials in a wide range of

environments
- Critically evaluate and analyse scientific literature, including the interpretation of data.
- Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
- Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

Field Report 1

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **24 April, by 11.55 pm**
Weighting: **20%**

Written report including maps, graphs and tabled data based on the findings from a fieldtrip to a coastal location

On successful completion you will be able to:
- Apply knowledge and understanding of important concepts in geomorphology
- Interpret geomorphic processes from landforms and materials in a wide range of environments
- Critically evaluate and analyse scientific literature, including the interpretation of data.
- Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
- Complete a field research project including data gathering and interpretation
- Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

Field Report 2

Assessment Type [1]: Report
Indicative Time on Task [2]: 20 hours
Due: **29 May, by 11.55 pm**
Weighting: **30%**

Written report including maps, graphs and tabled data based on the findings from a fieldtrip to a river

On successful completion you will be able to:

- Apply knowledge and understanding of important concepts in geomorphology
- Interpret geomorphic processes from landforms and materials in a wide range of environments
- Critically evaluate and analyse scientific literature, including the interpretation of data.
- Demonstrate geomorphological and sedimentological skills in data collection and analysis in laboratory and field settings
- Complete a field research project including data gathering and interpretation
- Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 25 hours
Due: **Mid-year exam period (TBA)**
Weighting: **35%**

Covers all material in the lectures and practical classes

On successful completion you will be able to:

- Apply knowledge and understanding of important concepts in geomorphology
- Interpret geomorphic processes from landforms and materials in a wide range of environments
- Critically evaluate and analyse scientific literature, including the interpretation of data.
- Communicate scientific information and concepts through oral, visual and written formats, including scientific reports

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

- You must attend one of five weekly, 3 hour **practical** sessions, usually held in 11WW 220
- **Lectures** will be live on zoom (Monday), and recorded, unless pre-recorded (to be advised)
- There are two compulsory **fieldtrips** for all students: 24-25 March or 25-26 March (1.5 days, overnight), and 12, 13 or 14 May (1 day)

COVID Information and on-campus classes

On-campus teaching continues to be scheduled for Session 1, 2023. Masks are not compulsory for classes in indoor spaces but please consider the safety of others and do not attend classes if you are experiencing symptoms.

Students are requested to minimise the risk of spreading COVID to themselves and others in accordance with the university and NSW Health guidelines: For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

PRACTICAL CLASSES comprise a practical exercise, including map and air photo interpretation, numerical analysis, examination of rocks and sediments or local fieldwork. Practicals provide hands-on experience of the topics in each module and are designed to assist learning by encouraging your active participation. The week 1 practical is held in 11WW 220 and some other practicals will be held in the field within a short distance from the university. **Each student must bring the appropriate equipment to the practical session and pre-read the practical description. Equipment may include; pencils, ruler, calculator, field note book. You should also wear appropriate clothes for the laboratory (week 1) and field: closed shoes, sun protection etc.**

LECTURES are designed to give depth and background to the practical learning. They provide you with a framework with which to focus your study of the subject and are an essential and important component of the course. They are by no means exhaustive on each and every topic, and you are expected to supplement them by reading especially from the textbook but also from the current journals, where the most up-to-date information can be found. There is a reading list for you to use as a starting point later in this document, and additional material will be referred to during the workshop/lecture program. Slides will be available on-line through **https://ilearn.mq.edu.au/** for viewing and/or printing but they are not a replacement for attending classes.

FIELD WORK There are two **compulsory** weekend fieldtrips in this unit during which a range of natural and human-modified landscape features are examined. Each of these fieldtrips reinforces and extends the content of the Soils and Coasts modules (first fieldtrip) or Catchment and Fluvial

Processes module (second fieldtrip). The major assignments are based on these field trips. In addition, three of the weekly practicals (Pracs 2, 3 and 7) will be conducted in the field within the normal practical class times. Equipment and safety issues for field work are described below.

Scaffolding of workshops, practicals, fieldwork and assessment

All modules will 'lead' with practical experiences and will be followed by large group teaching (lectures or zoom meetings) to back up and provide depth to the practical experience.

The fieldtrips build on knowledge, concepts and skills developed in the workshops/lectures and practicals. You should prepare for each fieldtrip by reading the recommended papers, attending the workshops/lectures and practicals.

Four **practicals** (two out of four submissions will be marked) and the **fieldtrips** (field reports) are directly **assessable**. Knowledge and understanding of **lecture content** is assessed in the mid-year **examination**.

TEXTBOOKS and ESSENTIAL READINGS

The following texts are suggested as being valuable reading. You are not required to purchase them, but may find them useful. There are some copies in the library.

· Paton TR, Humphreys GS and Mitchell PB, 1995. *Soils: A New Global View*. UCL Press.

- National Committee on Soil and Terrain, 2009. Australian Soil and Land Survey Handbook, 3rd edition. CSIRO Publishing, Melbourne.

· Fryirs, K.A. and Brierley, G.J., 2013. Geomorphic Analysis of River Systems: An Approach to Reading the Landscape. Wiley-Blackwell. ISBN 978-1-4051-9274-3.

For a full list of suggested readings see the Leganto block on the iLearn page (right hand side), as well as the PDF version in the unit information folder.

Methods of Communication

We will communicate with you via your university email or through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board (for general questions of relevance and interest to the class) or sent to the lecturer/convenor (firstname.lastname@mq.edu.au) for any individual questions. We only have access to your university email address and all iLearn announcements are sent to that address. Please add your university email address to your mail app and check regularly.

TECHNOLOGY USED AND REQUIRED

You will require access to a computer for parts of this unit. You can gain access to powerpoint slides used for each lecture by visiting the iLearn page for ENVS2266 **(https://ilearn.mq.edu.au/)**. iLearn may be used by staff to send reminders and notices concerning fieldtrips, practical classes and lectures. You should check the site regularly, especially the day before lectures/pracs. There is also the space for a bulletin board discussion between students; please feel free to use this to discuss issues relating to any aspect of the unit and geomorphology in general. For specific questions of the lecturers, email them directly (see front cover). For practical 4 you should use ArcMap GIS software. You will be able to access

this on University laptops in the pracs, in the 11WW computer labs after hours. You may also be able to install a copy on your own computer (not on Macs), requiring a licence code issued by the University.

The major assignments must also be submitted electronically through Turnitin, via the iLearn page for this unit. This software provides a means of gauging the timing of submission, an originality checker to test for potential plagiarism and a paperless grading system, more information on this program can be found at (http://turnitin.com/) and (http://mq.edu.au/iLearn/student_info/assignments.htm) and a 'quick guide' in ilearn next to the Turnitin link. Many of the readings (scientific papers) are available on-line from the library.

Unit Schedule

See iLearn page and laboratory manual (to be issued in week 1)

There are lectures and a practical in week 1 (see the iLearn page for details)

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be

made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

We always tinker a little to try and make things better. Lecture timeslots will be for either recorded lectures or live zoom meetings. Practical classes and fieldwork will be face-to-face as long as Covid health and safety provisions do not change.

Fieldwork

FIELDWORK

Weather: We never cancel fieldtrips for bad weather! You must be prepared to work in the rain with the appropriate clothing. Likewise you should always protect yourself from the sun and dehydration.

Transport: You will need to arrange your own transport for these fieldtrips. Ideally you should arrange to drive to each site with several other students from your practical class. There are usually a limited number of spaces available in staff vehicles.

Arrival: See the prac book for the arrival time for your fieldtrip. For Seal Rocks there are two options (1) 8 am Friday morning, (2) midday Saturday. For Macdonald River there will be three day-trip options (details to be confirmed).

Cost: You must cover your own food and transport costs and pay for accommodation. We book accommodation on behalf of the group and you must pay your money using the form to be provided on the iLearn page BEFORE THE TRIP.

Food: We will advise you of plans depending on which fieldtrip option you choose. You will need lunches to eat in the field and to provide your own breakfast. Depending on which fieldtrip option you choose you may need to bring one or two dinners. There are no shops nearby so you must bring everything with you for the duration of the fieldtrip.

Accommodation: Field accommodation is in bunk rooms with communal kitchens, dining, bathroom/toilet and work areas. You should bring (apart from the gear listed below) a sleeping bag, pillow and towel.

Departure: We aim to leave the field by: Seal Rocks - midday Saturday (first option) or 5pm on the Sunday afternoon (second option), Macdonald River: by 5pm, after all field equipment is returned and the accommodation cleaned. You must sign off before returning home.

Personal Field Equipment: Each student should bring the following aids/comforts on each field trip:

· sturdy shoes - no sandals, thongs, or high heels! (no visible skin below the ankles)

· water bottle (at least 1 litre)

· wet weather gear - we go whatever the weather!!! Cheap plastic ponchos will not survive walking through scrub.

· hat (with a wide brim, front and back), insect repellent and sunscreen

· field note book and pencils (see note below)

· calculator, hand lens, small pocket knife

· camera

· your lunch, drinks & snacks for the day - we do not stop at shops!!!

· a back pack to store it all in

FIELD EQUIPMENT YOU SHOULD PURCHASE

- Field notebook

· Hand lens

Each student MUST purchase a small hardcover notebook for use in the field. It should be bound down the spine on the left side, or across the top (but NOT spiral bound). The notebook does not necessarily have to be used only for this unit (you may have used it on previous trips) but it should be good quality and able to withstand a week in the field – in what may be wet conditions. The best, and most expensive, option is a waterproof Rite-in-the-Rain, Markrite or Chartwell notebook. There are several versions but the best options are 1. Geological (Rite in the Rain 540F), with columns, lines and grids (good for sketching and data), included classifications; 2. Small Rite in the Rain notebook (200T) which can be inserted in a hard cover (200C). The first will last you several fieldtrips (and units), the second will probably last you this Unit.

These items can be bought online, for example, Prospectors Supplies. They can be used in many ENVS, BIOL and EESC units.

SAFETY IN THE FIELD AND LABORATORY

Any student who has a disability that may limit their participation in field work or that could result in a medical emergency in the field should notify the unit convenor immediately. As a general guide to the level of physical fitness required, you should be able to walk 10 km over open undulating terrain in 3 hours.

Each student must ensure his/her own safety at all times during field excursions.

- Do not undertake fieldwork alone. You must work with at least one other person.
- You must be adequately equipped to undertake fieldwork, including wet weather

clothing, warm clothing, hat and sun protection, protective footware (closed toe boots or shoes).

- You should bring a first aid kit if you have one (they will be provided to each group but do not include any drugs/creams etc).
- Do not undertake any activity you feel to be unsafe. Discuss with the fieldtrip leader any concerns you have about particular tasks.
- Be watchful of the safety of your fellow students, if they become separated from the group or are at some other risk. Tell the fieldtrip leader as soon as you notice a potentially dangerous situation.
- If you have any medical condition (including allergies) that require medication then you should bring medication with you. We do not have and cannot provide any medication (including non-prescription).

Laboratory work in this unit does not involve hazardous chemicals. Nevertheless, in the laboratory you must wear safe (closed) footwear and generally follow safe practice. Where items of equipment are to be used, do not use them until you have received adequate training.